National Aeronautics and
Space Administration

Goddard Space Flight Center
Greenbelt, MD 20771

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Dear Reader:

Welcome to the Laboratory for Atmospheres and to our review of the Laboratory's accomplishments for 1999!

The Laboratory for Atmospheres consists of four hundred scientists, technologists, and administrative personnel working within the Earth Sciences Directorate of the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center (GSFC). Together, we're dedicated to our mission of advancing the knowledge and understanding of Earth's atmosphere, as well as the atmospheres of other planets. In doing so, we contribute directly to two of NASA's primary activities, the Earth Science and Space Science Enterprises.

We publish this report each year for a diverse group of readers—from our managers and colleagues within NASA to scientists outside the agency, from graduate students in the atmospheric sciences to members of the general public. Inside, you'll find descriptions of our philosophy, our people and facilities, our place in NASA's mission, and our accomplishments for 1999.

Among our accomplishments for the year, Laboratory staff have hosted 85 seminars, conducted 26 workshops, published 176 refereed papers, hosted 212 short-term visiting scientists, and participated in an array of educational activities.

Among our workshops and seminars, I'm pleased to mention one event in particular, the *Symposium on Cloud Systems, Hurricanes and TRMM: Celebration of Dr. Joanne Simpson's Career - The First 50 Years.* The workshop was a magnificent tribute to Joanne Simpson, the scientist and role model. Many of the major contributors to the field of cloud convection described the pivotal role that Joanne Simpson played in its evolution from a small specialty to a major area of research in atmospheric sciences. The symposium also featured an extensive review of the original ideas and efforts that led to the Tropical Rainfall Measuring Mission (TRMM).

Among our recent scientific developments, we are all excited about the launch of Terra in December. Terra is the first of NASA's Earth Observing System platforms designed as a broadly scoped data-gathering system. The mission will enable new research into the ways that Earth's land mass, oceans, air, ice, and life interact as a whole climate system. Terra reflects years of work by many at Goddard and at other government and private organizations. I thank Yoram Kaufman for his leadership over many years as Terra's Project Scientist.

Scientists in the Laboratory have also played a leadership role in the SOLVE and TRMM KWAJEX campaigns. SOLVE signifies Stratospheric Aerosol and Gas Experiment (SAGE) III Ozone Loss and Validation

Experiment. SOLVE is a measurement campaign designed to examine the processes controlling ozone levels at mid-to-high latitudes. The measurements will allow us to better predict how ozone responds to changing climate and changing levels of chlorine. The TRMM KWAJEX experiment was designed to carefully observe cloud and precipitation structures of oceanic convection. Our observations will enable us to quantify the uncertainties in TRMM rainfall estimates and in cloud microphysical models. We also use these models to obtain latent heating profiles from observed rainfall structures.

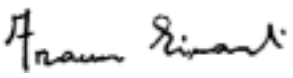
Our scientific efforts unfold within the context of NASA's Earth Science Enterprise. The Laboratory's Mark Schoeberl played a leadership role in formulating the Earth Science Vision for the Earth Science Enterprise, working closely with STAAC and AETD (Systems, Technology, and Advanced Concepts Directorate and Applied Engineering and Technology Directorate). The Earth Science Vision outlines NASA's strategy for the next 10-20 years to enable environmental forecasts at all scales. The Vision emphasizes the essential interplay of Earth-observing technology, information technology, and science in improving our ability to forecast weather and climate change.

Among our educational efforts, I am proud of the creation of the Goddard Howard University Fellowship in Atmospheric Sciences (GOHFAS). The program, funded by NASA Headquarters, is designed to attract outstanding under-represented minorities to the field of atmospheric sciences. Such under-representation is particularly noticeable within the African-American demographic. The American Meteorological Society reports that its African-American membership is only 0.9%. Of this number, few possess advanced degrees. In partnership with our Laboratory, Howard University selects ten minority undergraduates from any university in the country to spend their junior-year summer at Howard or in the Laboratory. They continue to be mentored by Laboratory scientists or by Howard during their senior year back at their home institution.

I hope you'll read further to learn more about the Laboratory for Atmospheres and our work. In addition, I invite you to visit us on the World Wide Web (http://dao.gsfc.nasa.gov/lab/lab_brochure.html) and to read the brochures and Web pages for each of the Laboratory's branches.

Before closing, I wish to pay tribute to Otto Thiele who retired last October after 46 years of distinguished government service. Otto was one of the original proponents of TRMM and was instrumental in organizing the TRMM ground truth program. I salute you, Otto, and thank you for your service to the Laboratory and the community.

Sincerely,



Franco Einaudi, Chief
Laboratory for Atmospheres, Code 910
Phone: 301-614-6786
Fax: 301-614-6301
E-mail: einaudi@carioca.gsfc.nasa.gov